

Etching Logos and Patterns With Simple Tools

Two Variations



Notes by Michael Kemp
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What I was looking For

- I wanted to be able to etch a logo and text on my ricassos – and use the same process to etch a larger pattern right down the blade.
- I didn't want to spend a bunch of money or get locked into some proprietary system.

What I Came Up With

After many blind leads for processes that relied on chemicals that are not readily available – or proprietary machines that would only etch a small area – I've settled on a process that uses an “etch mask” that is printed out on a laserjet printer. This means that any image or text I want to print has to be set up on a computer and printed on special Press-N-Peel Blue fed through the printer. The Press-N-Peel Blue is the only proprietary item in the process.

Applying this printed etch mask to the blade turns out to be the trickiest part of the process.

Overview

- First the Press-N-Peel Blue etch mask is created on the computer. This image must be the negative of what you want to etch – anything that is black will not etch – anything that is white will etch. It also must be a mirror image, because it will be applied face down to the steel – so any text or graphics must be flipped along the vertical axis. It must be printed on a laserjet printer – not the more common inkjet printers (more on that below).
- The Press-N-Peel Blue etch mask is applied to the knife using heat. This causes a layer of resin to be deposited on the metal – where there is resin, the etchant will not cut the steel. So this etch mask is a negative image of what you want to etch. I almost always have some touch up required to tidy up the etch mask. I also paint a wider area of the blade with fingernail polish to give myself a safety zone around the etch mask.
- I use a Ferric Chloride solution to etch the steel. I suspect any etching liquid or electrical etching would work – but I have only tested Ferric Chloride. I use plasticine clay to build a dam around the etch area – precautions must be taken that the etchant does not leak under the dam.

Step-By-Step

So let's walk through the process.

First you have to obtain the Press-N-Peel Blue – I've gotten it directly from <http://techniks.com/> - the 20 sheet pack comes to almost \$2/sheet when you add shipping. Now that I know it works I'll order the 100 sheet pack next time – which will cut my cost almost in half. If you are doing small logo and text on the ricasso then you probably won't go through the sheets very fast – but since I'm doing full blade patterns I tend to go through it.

If you have a computer program that will make the mask image – and a laserjet to print on – then the Press-N-Peel Blue is the biggest expense.

Making the image

To make the mask image you need a program that can take the text you want and the images you want ... create a negative (white on black) ... and that can mirror both text and image. I use an old version of a “layout” program called Freehand because it's what I have on hand. A layout program will do everything that I need it to do. There are WAY too many programs out there with WAY too many good and bad points for me to figure out. Whatever you use, you will need to be able to create a white-on-black negative – and be able to make a mirror image of the text.

To give you an example of what I'm talking about, here's a “Green Man” image I'm working on for a kitchen knife – note the image is white-on-black and that the text is mirrored:



One thing I needed in a computer program was the ability to do Bezier curves. That means that the lines are not “drawn” particularly – more like they are engineered. Each line is defined by a series of widely spaced points. Each point has a forward and a backward “handle” that push or pull the shape of the line on that side of the point.

Here's a closeup of the cheek with a few of the handles showing:



But I digress – I hope you get some idea of what the image needs to look like on the computer.

Printing The Image

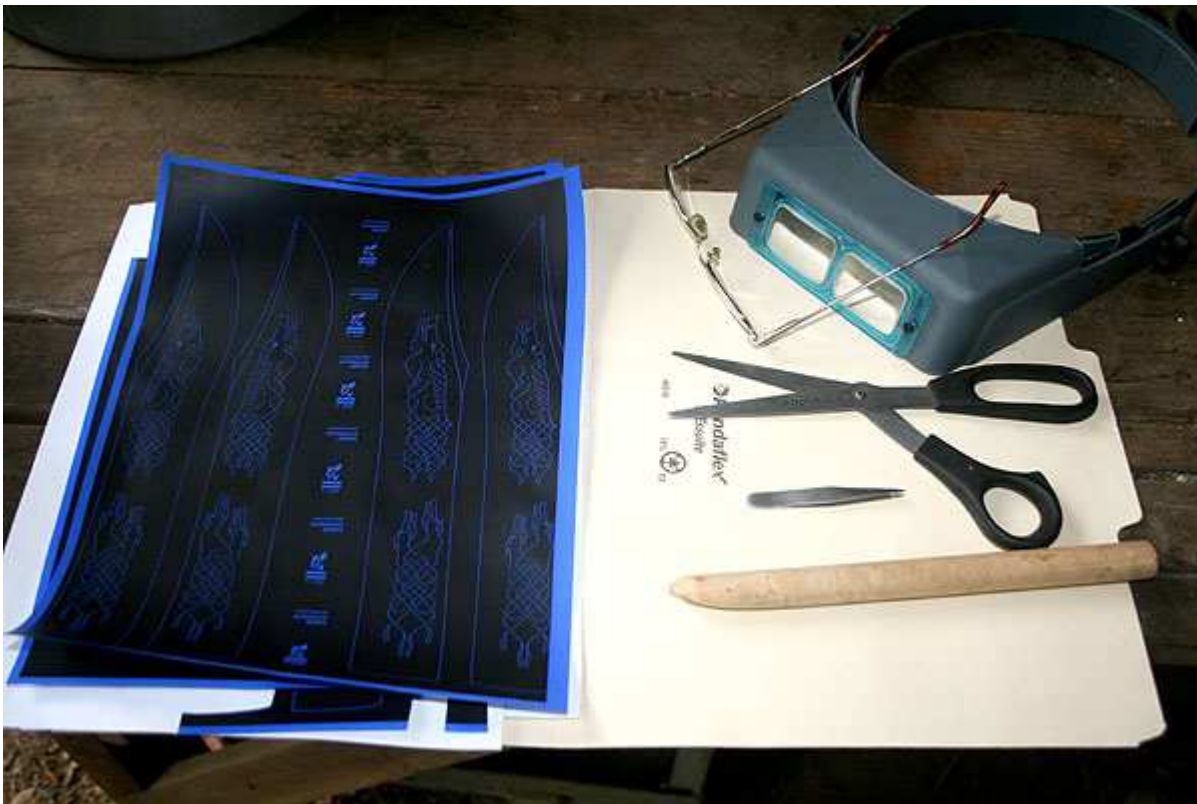
The Press-N-Peel Blue looks to me like it is simply plastic overhead projector sheet, with one side coated with a blue resin. One side is bare plastic (shiny) and the other side is resin coated (dull). You print onto the dull side. I have always printed an entire sheet at once. I always set up the sheet as full as I can make it – and I always make several copies of the image to be etched – because I'm likely to mess up one or two attempts before I get it right.

A laser printer is what is specified for activating Press-N-Peel Blue. I've used my aging HP Laserjet printer with reasonable success. Laser printers put a static charge on the paper as it is fed through, laying down the static charge in the pattern of the letters and images to be printed. The laser “toner” dust sticks to the charged images and is then heated to fuse the toner to the paper. Something about this fusing process is what activates the Press-N-Peel Blue resin. Anything that prints black will transfer from the Press-N-Peel Blue to the blade – and that will mask off that area from being etched.

You should be able to tell from your printer's label or manual whether it is laser or inkjet. Inkjet cartridges are small and squarish, while laser toner cartridges are long and rectangular – they are just about as wide as the printer.

Setting Up Your Work Area

I do my etching in an open shed. Here's shots of the Press-N-Peel Blue with the tools needed:



Magnifying glasses are good. Scissors are used to cut out the image you are going to apply. Tweezers are nice to handle the Press-N-Peel without getting it grubby. I've taken a piece of softwood dowel and ground one end to a slightly rounded shallow angle – I use this as a burnishing tool.

You will also need a griddle or similar thermostat-controlled source of heat to put the knife on – and an ironing iron to put on top of the knife... plus some pieces of plain paper &/or paper towel to protect the blade from getting scratched:



Yes – my setup is pretty funky! I set the griddle so that it is a little over 200°F – the oven thermometer shown here reads about 210°F. The iron is set somewhat higher – this old iron is set between wool and cotton – and the oven thermometer reads about 320°F if you let it sit on the iron.

You might be able to see that I've ground off part of the lip of the griddle so that the knife can lay flat with the tang sticking over the side.

You will also need the items shown below... plus some paper towels, acetone, and denatured alcohol for cleanup. After I use the acetone I generally do another swab of the knife with alcohol just to be sure.



Let's walk through the process and you'll see how it all gets used.

Variation 1 – for small images

When you work with a small area it seems better to me if you heat up the knife first – to the point that the resin on the Press-N-Peel sticks to the knife right away.

1. Turn on the griddle and iron – let them get up to temperature.
2. Lay a sheet of plain paper &/or paper towel on the griddle – put the knife on the paper and cover it with more paper &/or paper towel – then put the iron on top. Be sure that the iron is on top of the target area to be etched.
3. Wait at least 2 or 3 minutes for the knife to warm up – then uncover the knife.



4. Place the Press-N-Peel mask on the target area. It will stick as soon as it comes in firm contact with the heated blade – so I place one corner, then get it square plumb and true before laying rest of the mask down. If you mess up you have to throw away that piece of Press-N-Peel and use acetone to clean off the blade. Did I mention that I always print multiple copies of the image to be etched? I should note that any specks of dust on the blade or the Press-N-Peel will make a defect in the etch mask.



Cover the knife back up with paper and put the iron on top. Let it cook for 2-1/2 to 3 minutes. When you uncover the knife, the Press-N-Peel should have turned from a pastel blue color to midnight blue ... that seems to indicate that the resin has been melted onto the metal.



Remember that dowel that I ground a shallow angle on one end? Here is where you burnish the etch mask to be sure that the resin has transferred to the metal.



Next, spray the knife to cool it down – in this photo the blade was still too hot for me to hold barehanded so I've got it by a pair of pliers on the tang. The resin needs to be cold before you remove the plastic layer or it will smear (trust me – I've tried all the variations).




And now the moment of truth. Grab a corner of the Press-N-Peel with the tweezers and lift off the plastic.





And here is what you **DO NOT** want to see. This attempt had too many voids in bad places.





OK – after cleaning the blade and trying a second time – this is a mask that I can fix. All the voids are away from the text and graphics.

11.  How do you “fix” voids? Put on those magnifying glasses, get out your ultra-fine tipped Sharpie, and color them in. No – ferric chloride will not eat through Sharpie ink – at least not if you get a good solid coating of it.

12.  And after I've fixed the voids I use cheap fingernail polish to make a larger safe area for the etching. I've thinned the polish down with acetone to make it easier for me to apply.

13.  Now we're getting down to brass tacks. Use the vice and the level to get the etch area good and flat. I've found that if I am a little off, and my pool of etchant is deeper on one side – that side will also etch deeper.

14.  Now it's time to show you give a dam. Make a retaining wall with plasticine – I've had real trouble with the etchant leaking out under the dam so I take one or two precautions. I always go around the inside with a sharp stick pressing down the inner edge of the dam. Be careful not to get any plasticine onto your etch design or you are up a creek. Sometimes (especially with larger dams) I will use a propane torch to gently warm the blade from the bottom. A little warmth will soften the plasticine and make a really secure bond – too much heat and the plasticine will melt and you will be back up that proverbial creek.

15.  Now for the etchant. My ferric chloride is in powder form. I can't give an exact ratio – but it is about two level tablespoons of powder to eight ounces of water. If you get it too strong it will do a little etching through the resin mask and you wind up with a little orange-peel texture around your etch pattern. Given the learning curve on applying the etch mask, and my uncertainty about the acid strength – I HIGHLY recommend doing some trial runs on junk blades. I've done all my etching so far on 5160 steel – and other steels might act differently too!

At any rate – I leave it to etch for 30 to 40 minutes. On a cool day like today it would definitely be 40 minutes.

16.



It is tricky to dump the acid out of the dam without getting it on other parts of the blade – but in any case, do this near a hose or other water supply which you can use to totally flush off all the acid. I believe that you could use baking soda to neutralize the acid – but I've never needed to bother with that.

And here's what you get for your efforts!

I hope this has been helpful.

I'm still working to perfect my process. I still get way more voids in the etch mask than I think I should.

One thing I've tried with some success is:

Variation 2 – for large images

Second verse – same as the first. This process is the same as above, with the following exceptions:

- Do not pre-heat the blade: Place the blade on the hot griddle (with protective paper under it) and immediately position the large Press-N-Peel mask where you want it. Cover the blade with paper &/or paper towel and put the iron on top.
- After 30 to 60 seconds poke all the bubbles: Large masks are worse than small ones for trapping air bubbles. You can see the bubbles if you uncover the blade and look at a very low angle. Light reflected off the shiny plastic Press-N-Peel will clearly show where the bubbles are. Use a pin to pierce each bubble, then use the burnishing tool to deflate each bubble.
- Let it heat/cook longer: I've used ten minutes. The trick with the resin is that with too much heat (either too hot or for too long) will cause the resin to smear.
- It is the same routine after cooking: Burnish, cool with water, say a prayer to the deity of your choice, and peel off the plastic. Fix the mask. Build your dam. Fill with acid and wait!

Variation 2 should work for small images too – but when I put the paper on top of the knife to protect it from the iron, a small piece of Press-N-Peel gets knocked out of place way too easily – so I prefer Variation 1 for small images.

I certainly hope these ideas are useful to you.

Keep Well!

Michael Kemp

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